



Delaware Department of Education
Appendix: Labor Market Information (LMI) Review
 Delaware CTE Program of Study Application

Table 1: LEA Information

(see instructions on page 2, LMI Instructions & Guidance Document)

Career Cluster:	<u>Agriculture, Food, and Natural Resources</u>
Career Pathway:	Environmental Service Systems
CTE Program of Study:	<i>Environmental and Natural Resource Science</i>
High School and LEA Name:	
County:	

Table 2: Labor Market Information (LMI) Benchmarks by Geographic Region

(see instructions on page 3, LMI Instructions & Guidance Document)

Region	Employment 2014	Employment Change 2012-22	Employment Growth 2012-22	Avg. Wage 2014
United States	132,588,810	15,628,000	10.8%	\$46,440
Delaware	412,140	40,900	9.4%	\$49,254
District of Columbia	674,650	57,930	7.7%	\$78,580
Maryland	2,557,510	189,370	6.1%	\$53,470
New Jersey	3,869,260	313,190	7.5%	\$53,920
Pennsylvania	5,653,840	467,940	7.7%	\$45,750
Virginia	3,648,490	534,210	13.5%	\$50,750

Table 3: LMI by Career Cluster & Pathway

(see instructions on page 4, LMI Instructions & Guidance Document)

					2012-2022			
Cluster Code	Cluster/Pathway Title	High Skill	High Wage	High Demand	Employment 2014	Employment Change 2012-2022	Employment Growth 2012-2022	Average Wage 2014
1	<i>Agriculture, Food, and Natural Resources</i>		x		9,625	-541	-5.3%	\$54,422
	Rank Select Career Cluster by the Following Categories ->				(13 of 16)	(16 of 16)	(16 of 16)	(8 of 16)
1.06	<i>Environmental Service Systems</i>	x	x		1,398	173	12.5%	\$43,737
	Rank Select Career Pathway by the Following Categories ->				(4 of 7)	(1 of 7)	(1 of 7)	(4 of 7)
1.06	<i>Environmental Service Systems – Mid-Atlantic States</i>	x	x		56,100	6,203	11.2%	\$47,968
1.06	<i>Environmental Service Systems – United States</i>	x	x		441,780	66,300	14.7%	\$46,171
1.01	Food Products and Processing Systems		x		256	-3	-1.2%	\$51,199
1.02	Plant Systems				2,500	-173	-6.2%	\$31,501
1.03	Animal Systems			x	1,458	160	9.9%	\$22,974
1.04	Power, Structural & Technical Systems				446	7	1.9%	\$32,709
1.05	Natural Resources Systems	x	x		574	-32	-4.0%	\$183,840
1.07	Agribusiness Systems		x		2,993	-673	-22.0%	\$72,570

Questions: LMI by Career Cluster & Pathway Analysis

(see instructions on page 4, LMI Instructions & Guidance Document)

1. How does the employment, the employment change, the employment growth rate, and the average wage for the identified career cluster compare to LMI for other clusters in the State of Delaware? Is the career cluster rated as high wage and high demand?

The Agriculture, Food, and Natural Resources Career Clusters rank in the top eight (8) for average wage and the top thirteen (13) in employment when compared to other clusters. The career cluster rating is high wage.

2. How does the employment, the employment change, the employment growth rate, and the average wage for the identified career pathway compare to LMI at the cluster level? How does the identified pathway level LMI in Delaware compare to the pathway level LMI in the Mid-Atlantic and/or the United States? How does the identified pathway level LMI in Delaware compare to the other pathway level LMI in Delaware?

Employment growth rate is significantly higher at the career pathway level than at the cluster level, while the employment and average wage are slightly lower. Salaries increase slightly as you move out of the state of Delaware and into the Mid-Atlantic and larger United States region but employment change and employment growth numbers decrease slightly in the region but increase by over 2%. Related pathways have lower wage potential, but show slightly higher employment, employment change and employment growth numbers within the state of Delaware.

Table 4: LMI by Standard Occupation Code (SOC)
(see instructions on page 6, LMI Instructions & Guidance Document)

					2012-2022			
SOC Code	Occupation Title	High Skill	High Wage	High Demand	Employment 2014	Employment Change 2012-2022	Employment Growth 2012-2022	Average Wage 2014
17-3025	Environmental Engineering Technicians	x	x		39	6	16.7%	\$48,430
17-2081	Environmental Engineers	x	x		168	17	10.2%	\$80,820
19-4091	Environmental Science and Protection Technicians, Including Health	x			278	32	17.2%	\$35,710
53-7081	Refuse and Recyclable Material Collectors		x	x	456	73	15.4%	\$38,240
51-8031	Water and Wastewater Treatment Plant and System Operators	x	x		260	20	8.5%	\$42,590
19-1031	Conservation Scientists	x	x		41	3	4.8%	\$56,540
19-0241	Environmental Scientists and Specialists, Including Health	x	x	x	437	57	14.6%	\$72,050
19-4021	Biological Technicians		x		19	26	9.0%	\$40,690
19-1013	Soil and Plant Scientists		x	x	82	11	15.3%	\$58,520

Questions: LMI by Standard Occupation Code (SOC)

(see instructions on page 7, LMI Instructions & Guidance Document)

3. How closely related to the program of study are the identified occupations (SOCs)?

The Environmental and Natural Resources Science Program of Study focuses on science is a process, energy conversions underlie all ecological processes, the Earth itself is one interconnected system, humans are natural systems, environmental problems have a cultural and social context, and human survival depends on developing practices that will achieve sustainable systems. The SOCs listed in table 4 are directly related to the program of study. Students involved in the program will have to complete one year of life or physical science as well as one year of algebra.

4. Are there adequate state-level projected job openings or employment growth projections at the occupation level to justify starting a new program? Do the occupations related to the program of study rank as high skill, high wage and/or high demand?

The number of job openings projected for the cluster and pathway as well as the related SOCs will support an environmental and natural resource science program of study. All related SOCs and the cluster and pathway are rated as either high skill, high wage, and high demand jobs.

Table 5: LMI Supply Indicators by Secondary & Post-Secondary Levels

(see instructions on page 7, LMI Instructions & Guidance Document)

			Program Completion/Enrollment		
Program Code (CIP)	Program (CIP) Title	School	2011-12	2012-13	2013-14
Total Secondary Programs of Study			38	25	39
03.01041	Environmental Science/Natural Resources		38	25	39
Total Post-Secondary Programs of Study			89	140	124
03.0199	Natural Resources Conservation and Research, Other	Delaware State University	0	0	2
03.0201	Natural Resources Management and Policy	Delaware State University	4	8	1
03.0299	Natural Resources Management and Policy, Other	Delaware State University	0	4	0

15.0507	Environmental Engineering Technology	Delaware Technical Community College	4	6	5
15.0506	Water Quality and Wastewater Treatment Management and Recycling Technology/Technician	Delaware Technical Community College	3	2	2
03.0199	Natural Resources Conservation and Research, Other	Wilmington University	0	0	0
03.0104	Environmental Science	University of Delaware	29	35	28
03.0103	Environmental Studies	University of Delaware	9	16	16
14.1401	Environmental/Environmental Health Engineering	University of Delaware	18	20	20
03.0199	Natural Resources Conservation and Research, Other	University of Delaware	0	11	20
03.0201	Natural Resources Management and Policy	University of Delaware	0	5	4
03.0601	Wildlife, Fish and Wildlands Science and Management	University of Delaware	18	23	21
03.0104	Environmental Science	Wesley College	2	6	4
03.0103	Environmental Studies	Wesley College	2	4	1

Questions: LMI Supply Indicators by Secondary & Post-Secondary Levels

(see instructions on page 8, LMI Instructions & Guidance Document)

5. Is the Secondary Program articulated to or in any way related to the identified Post-Secondary Program(s)?

The Department of Education is currently negotiating articulation agreements with Delaware Technical Community College (DTCC), Delaware State University (DSU), and Wesley College (WC).

6. How does the annual completion data at the Secondary and Post-Secondary level compare to the projected career pathway-related projected job openings in Table 4?

The numbers of enrolled students in Environmental and Natural Resources Science related programs at the post-secondary level indicate that this is a moderate interest area. The Environmental and Natural Resource Science program of study in secondary schools will prepare students with the knowledge and abilities necessary to successfully participate in post-secondary programs and enter the workforce. This work will lead to students achieving articulated credit while in high school and lessening the amount of time required to enter the workforce.

Table 6: Real-Time LMI including Geography, Job Titles, Education Levels, Skill Sets, and/or Industries

(see instructions on page 9, LMI Instructions & Guidance Document)

Questions: LMI Supply Indicators by Secondary & Post-Secondary Levels

(see instructions on page 9, LMI Instructions & Guidance Document)

7. How do the real-time LMI data influence the implementation of the identified program of study at the local level? What information within the data-set is most valuable at the LEA, school, and program level?

Real-Time LMI Report will be published in the fall of 2016.

8. Are there additional LMI data (demand & supply) at the local, county, state, or Mid-Atlantic region that support starting a new program in this pathway? This includes additional occupations for which there is not an SOC, any other analysis of LMI data, and any additional information on demand & supply factors that influence employment which can include real-time labor market information.